

**REMARKS**

The present application has 20 claims, with Claims 1 and 18 being independent claims. Claims 18 and 20 are allowed; Claims 1-17 are rejected; and Claim 19 is objected to. Responsive to each paragraph of the Office Action, the Applicant has the following remarks.

**Specification:**

The disclosure was objected to because of several informalities. These have been addressed.

**Claim Objections:**

Claims 1-17 and 19 were objected to because of several informalities. These have been addressed.

**Claim Rejections – 35 U.S.C. § 112:**

Claims 5, 11, and 14 were rejected under 35 U.S.C. §112, second paragraph as being indefinite. Claim 5 has been amended to specify the first plurality of cooling holes; Claim 11 has been amended to specify the second plurality of cooling holes; and Claim 14 has been amended to specify the third plurality of cooling holes.

**Claim Rejections – 35 U.S.C. § 102:**

Claims 1, 2, 6-8, 12, 13, 15, and 16 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,539,627 to Fleck and under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. US 2002/0094272 to Fleck. Fleck was described as showing an airfoil with a first plurality of cooling holes having a turbulated section and a non-turbulated section, a second plurality of cooling holes having a turbulated section and a non-turbulated section, and a third plurality of cooling holes.

The Applicant has amended independent Claim 1 to specify that the turbulated section of the first plurality of cooling holes has a different length than the turbulated section of the second plurality of cooling holes. *See* Figs. 2 and 3. The cited references, however, do not show turbulated section of different lengths. The goal of efficient turbine design is to cool the airfoils with the least amount of air possible because air that is used for cooling is not air that may be used to generate power. The use of the turbulated sections provides for increased cooling efficiency. The need for this cooling air, however, decreases as one moves further from the edge of the airfoil. The Applicant thus has specified that the turbulated sections are of different sizes. The Applicant therefore asserts that independent Claim 1, and the dependent claims thereon, are patentable over the cited references.

Claims 1, 2, 4-8, and 10-15 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,413,463 to Chiu, et al. Chiu was described as showing an airfoil with a first plurality of cooling holes including a turbulated section and a non-turbulated section. The Applicant asserts that the amendments made herein overcome the rejection. The Applicant thus asserts that Claim 1, and the dependent claims thereon, are patentable over the cited reference. The Applicant also has addressed the Examiner's concerns with respect to the dimension recited in Claims 5, 11, and 14.

Claims 1, 2, 6-8, 12, 13, 15, and 16 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,980,209 to Barry. Barry was described as showing an airfoil with a first plurality of cooling holes having a turbulated section and an unnumbered non-turbulated section. The Applicant respectfully submits that the amendments made herein overcome the rejection.

Claims 1, 2, 6-8, 12, 13, 15, and 16 were reject under 35 U.S.C. §102(b) as being anticipated by Japanese Patent No. 3-182602. The reference was described as showing an airfoil with a first plurality of cooling holes having a turbulated section and a non-turbulated section. The Applicant respectfully submits that the amendments made herein overcome the rejection.

**Claim Rejections – 35 U.S.C. § 103**

Claims 3 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chiu. Chiu does not disclose the first plurality of cooling holes having the turbulated section extending from about 35% of the length of the first plurality of cooling holes to about 75% of the length and does not disclose the second plurality of cooling holes having the turbulated section extending from about 50% to about 75% of the length. The Examiner stated that the recitation of a specific range, however, is deemed to be “a matter of choice in design.”

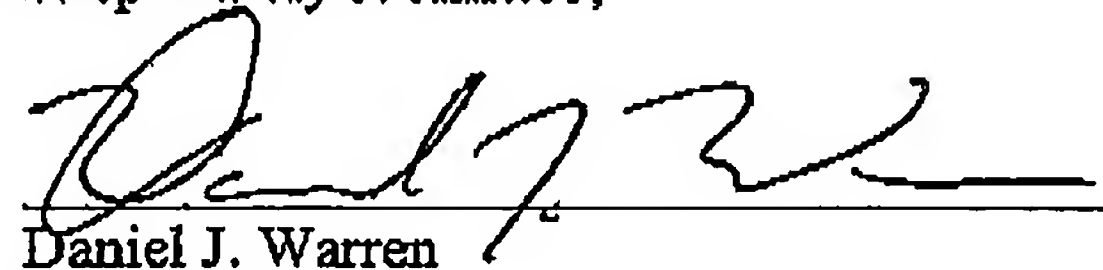
The Applicant respectfully traverses the rejection on the basis that the use of the differing lengths of turbulated sections is not a matter of mere design choice. As described above, the use of the different lengths provides more efficient cooling with the use of less air. Specifically, the use of the different lengths provides a more efficient and extended lifetime for the airfoil while increasing the power production. The Applicant thus submits that the claims are patentable over the cited references.

Claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over either Fleck, Barry, or the Japanese reference in view of U.S. Patent No. 5,117,626. The Applicant respectfully submits that the claims are patentable for the reasons described above.

**CONCLUSION**

The Applicant believes it has responded to each matter raised in the Office Action. Allowance of all claims is respectfully solicited. Any questions may be directed to the undersigned at 404.853.8028.

Respectfully submitted,



Daniel J. Warren

Reg. No. 34,272

**SUTHERLAND ASBILL & BRENNAN LLP**

999 Peachtree Street, N.E.  
Atlanta, Georgia 30309-3996  
(404) 853-8000  
(404) 853-8806 (Facsimile)  
[daniel.warren@sablaw.com](mailto:daniel.warren@sablaw.com)

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